

## **REMARKS**

Claims 21-32 are pending in this application, claims 1-10 and 12-20 having been canceled, claims 21-32 having been added by this Amendment. Reconsideration in view of the following remarks is kindly requested.

### **Summary of Examiner Interview**

Initially, Applicants' representative wishes to thank Examiner Behrend for his time at the interview of June 2, 2005, the contents of which are summarized below.

Prior to the Interview, Applicants' representative provided discussion points. At the Interview, no agreement could be reached as to original claims 1-20. However, Examiner Behrend was receptive to Applicant claim amendments which could further distinguish the cited art of record, but could not enter as the amendments would allegedly require additional consideration after final.

Accordingly, in an effort to overcome the objections and rejections and expedite prosecution, Applicants have cancelled claims 1-20 and added new claims 21-32. New claims 21-32 have been added as a result of the interview with Examiner Behrend, and are based on the discussion in the interview of the prior art cited by Examiner.

### **Claims Drawn to Non-Elected Invention**

As previously pending claims 1-10 and 12-20 have been canceled by this amendment, the objection as to original claims 18-20 is now moot.

### **Claim Rejections – 35 U.S.C. §112**

Previously pending claims 1-10 and 12-17 were rejected under the second paragraph as allegedly being vague and indefinite. As previously pending 1-10 and 12-20 have been canceled by this amendment, the rejection as to claims 1-10 and 12-17 is now moot.

New claims 21-32 have been drafted in light of the suggestions at the interview, in an effort to place the claims in better form for U.S. practice and to comply with the second paragraph of 35 U.S.C. §112.

### **Claim Rejections – 35 U.S.C. §103**

Previously pending claims 1-10 and 12-17 stood rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over any of Aoyama et al. (USP 5,432,829), Orii et al. (USP 6,735,267) or Koyama et al. (USP 6,335,956) in view of Ueda et al. (USP 5,068,082) alone or with either Bender et al. (USP 6,600,800) or Ogiya et al. (USP 4,968,479). This rejection is respectfully traversed, and is inapplicable to new claims 21-32 as set forth below.

Initially, claims 1-10 and 12-17 have been cancelled, thus the rejection as to these claims is now moot. New claims 21-32 have been drafted in an effort to provide further protection for Applicants invention, to distinguish over the applied art of record, and are the result of discussions with and suggestions from Examiner Behrend. Claims 21 and 29 have thus been drafted to reflect the example embodiment of FIGS. 2-4, and claim 31 has been drafted to reflect that illustrated in FIG. 5.

As to claim 21, Applicants submit none of Aoyama et al., Orii et al. or Koyama et al. teach or suggest of a fuel bundle for a boiling water reactor, comprising, at least:

a plurality of fuel rods including full-length rods and part-length rods arranged as a plurality of concentric fuel-rod rings within the channel around the water passages, the part-length rods further comprising:

a first part-length rod group consisting of two short-length fuel rod subsets in a mirror-image, facing relationship to one another, each subset further consisting of three short-length fuel rods in a triangular orientation and directly adjacent to a given side of the pair of water passages so as to face the other subset on the other side of the water passage pair, and

a second part-length rod group consisting of four pairs of intermediate-length rods, each intermediate-length rod pair centrally

located in an outermost ring of the bundle adjacent a corresponding one of the four sides of the channel. (underlining for emphasis)

In Orii et al. (FIG. 17 appears most relevant), there is shown only short rods in a paired-facing relationship, with short rod pairs centrally located on each side of the channel.

There is thus no teaching of a first part-length rod group consisting of two short-length fuel rod subsets in a mirror-image, facing relationship to one another, each subset further consisting of three short-length fuel rods in a triangular orientation and directly adjacent to a given side of the pair of water passages. There is further no teaching of a second part-length rod group consisting of four pairs of intermediate-length rods, each intermediate-length rod pair centrally located in an outermost ring of the bundle adjacent a corresponding one of the four sides of the channel. Orii et al. is inapplicable to new claim 21 for at least these reasons.

Of the figures relied on by the Examiner in Koyama et al. (FIGS. 1, 3, 9, 11-14), none teach or suggest either of the above features.

In the most relevant figure of Aoyama et al. (FIG. 14), there is shown only partial-length rods in a paired-facing relationship on either side of three water passages, with partial-length rod pairs centrally located on each side of the channel. There is no indication as to whether the part-length rods include a combination of short and intermediate fuel rods.

There is thus no teaching of a first part-length rod group consisting of two short-length fuel rod subsets in a mirror-image, facing relationship to one another, each subset further consisting of three short-length fuel rods in a triangular orientation and directly adjacent to a given side of the pair of water passages.

There is further no teaching of the second part-length rod group consisting of four pairs of intermediate-length rods, each intermediate-length rod pair centrally located in an outermost ring of the bundle adjacent a corresponding one of the four sides of the channel. Aoyama et al. is inapplicable to new claim 21 for at least these reasons.

However, the Examiner relies on numerous figures in Ueda et al. (FIGS. 6, 8, 10, 19, 29, 32, 40-42, 44, 46, 47, 49, 50, 56, 60, 63, 68 and 69) to allege that it is well known to provide two groups of part-length rods with the longer group positioned next to the channel wall and the shorter group positioned proximate the water rods (Final OA of May 4, 2005, page 4). Bender et al. and Ogiya et al. were merely cited for a teaching of placing short rods near a water channel and intermediate rods near a channel boundary.

However, new claim 21 does not recite the above general structure of rods within a fuel bundle. Claim 21 recites a specific fuel rod arrangement in which a first part-length rod group consists of two short-length fuel rod subsets in a mirror-image, facing relationship to one another, and each subset further consists of three short-length fuel rods in a triangular orientation and directly adjacent to a given side of the pair of water passages.

Absent the Examiner finding this specific claimed configuration in Ueda et al., (only FIGS. 19 and 68 are relevant, showing four partial-length fuel rod subsets arranged around a single water channel), Ueda et al. fail to cure the deficiencies present in each of Orii et al., Koyama et al. and/or Aoyama et al. For at least this additional reason, claim 21 is submitted to be allowable over the art of record, as the combination of references fail to teach each and every feature of claim 21.

Claims 22-28 are allowable by virtue of their dependency on claim 21, submitted to be in condition for allowance.

Claim 29 recites, *inter alia*, where a “10X10 fuel-rod matrix includes six short-rods consisting of two three-rod subsets in mirror image relationship with one another, the short-length rods in each subset configured in a triangular orientation and directly adjacent to the pair of water passages so as to face the other subset”. Absent the Examiner finding this specific claimed configuration in the cited references, which Applicants submit do not exist in any of the cited references, claim 29 is submitted to be allowable over the art of record for the above-noted feature.

Claim 30 is allowable by virtue of its dependency on claim 29, submitted to be in condition for allowance.

Claim 31 recites, inter alia, where a "9X9 fuel-rod matrix includes six short-rods consisting of two three-rod subsets in mirror image relationship with one another, the short-length rods in each subset configured in a triangular orientation and directly adjacent to the pair of water passages so as to face the other subset". Absent the Examiner finding this specific claimed configuration in the cited references, which Applicants submit do not exist in any of the cited references, claim 31 is submitted to be allowable over the art of record for the above-noted feature.

Claim 32 is allowable by virtue of its dependency on claim 31, submitted to be in condition for allowance.

#### **Objection Under 37 CFR 1.78(b)**

By this Amendment, claims in the instant application no longer conflict with claims 4,10 and 12 in Application No. 10/748,174. Withdrawal of the objection is kindly requested.

#### **CONCLUSION**

Accordingly, in view of the above remarks and amendments, reconsideration of all outstanding rejections and allowance of each of claims 21-32 in connection with the present application is earnestly solicited.

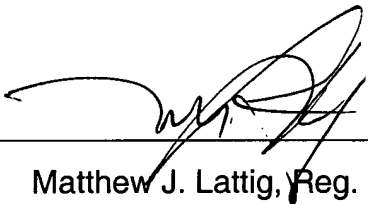
Pursuant to 37 C.F.R. § 1.17 and § 1.136(a), Applicants respectfully petition for a one (1) month extension of time for filing a response in connection with the present application, and the required fee of \$120.00 is attached.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned at (703) 668-8026 (direct).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge any underpayment or non-payment of any fees required under 37 C.F.R. §§ 1.16 or 1.17, or credit any overpayment of such fees, to Deposit Account No. 08-0750, including, in particular, extension of time fees.

Respectfully submitted,

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